TEAC®

SERVICE MANUAL

PD-135

Compact Disc Player

COMPACT disc DIGITAL AUDIO

Effective; Octover 1987

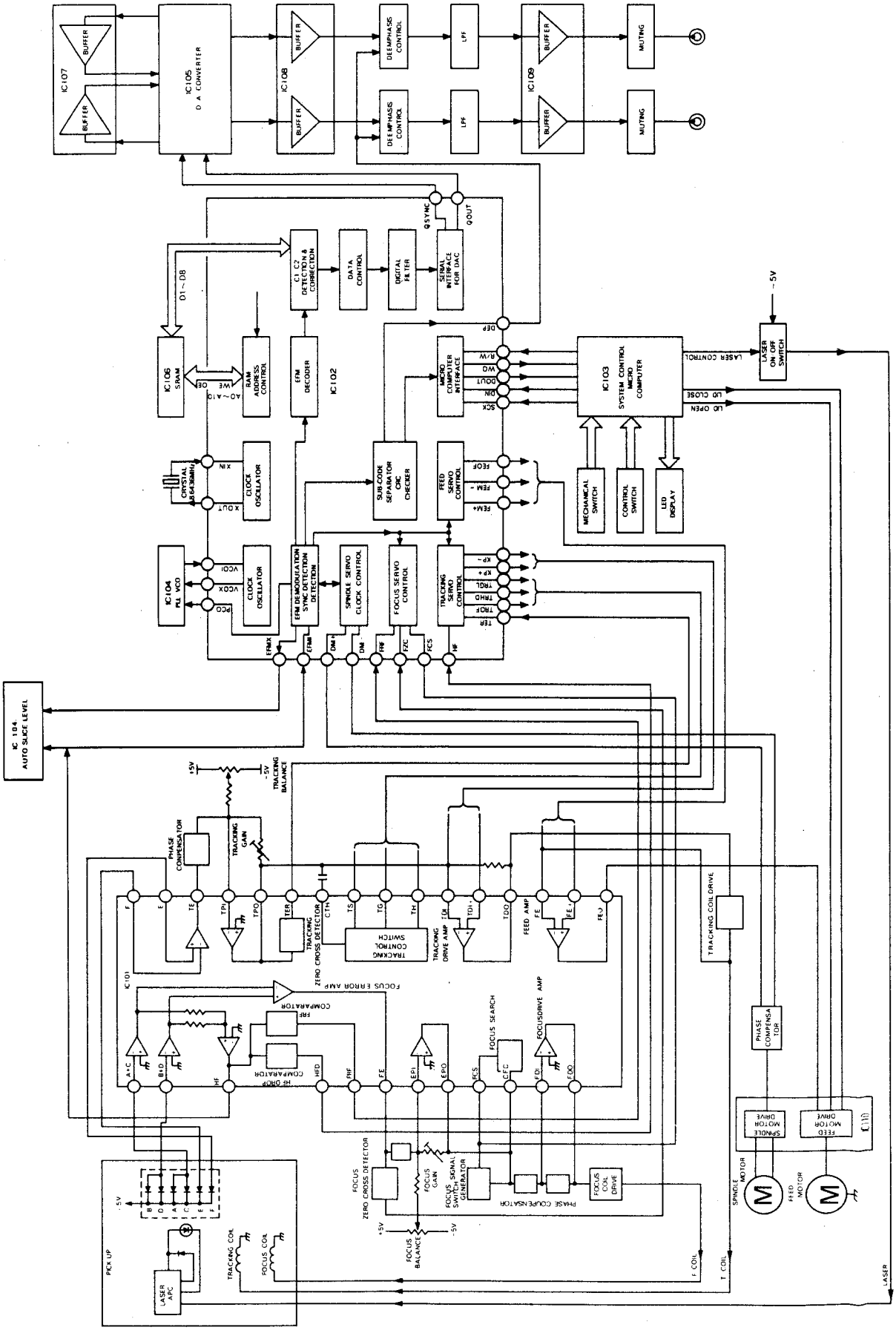
5704037300

SPECIFICATIONS

System	Compact disc digital audio system
AUDIO CHARACTERISTICS	
Frequency Response	5Hz-20kHz, ± 1dB
Harmonic Distortion	Less than 0.007% (1kHz)
S/N Ratio	More than 90dB
Wow and Flutter	Quartz precision
Channel Separation	More than 80dB (1kHz)
Output Voltage max.	2Vrms
FUNCTIONS	
Instant Program Selection	Sequential, with MUSIC SKIP ▶▶I and I◀◀ buttons
Index	Sequential, with SEARCH/INDEX ▶▶ and SEARCH/INDEX ◀◀ buttons (Stop mode only)
Forward/back	Forward/back with sound
Program Functions	16 selections
Repeat	All selections all programmed selections
Reset	Press STOP button
Pause	Each selection
Disc Loading	Motor driven horizontal loading

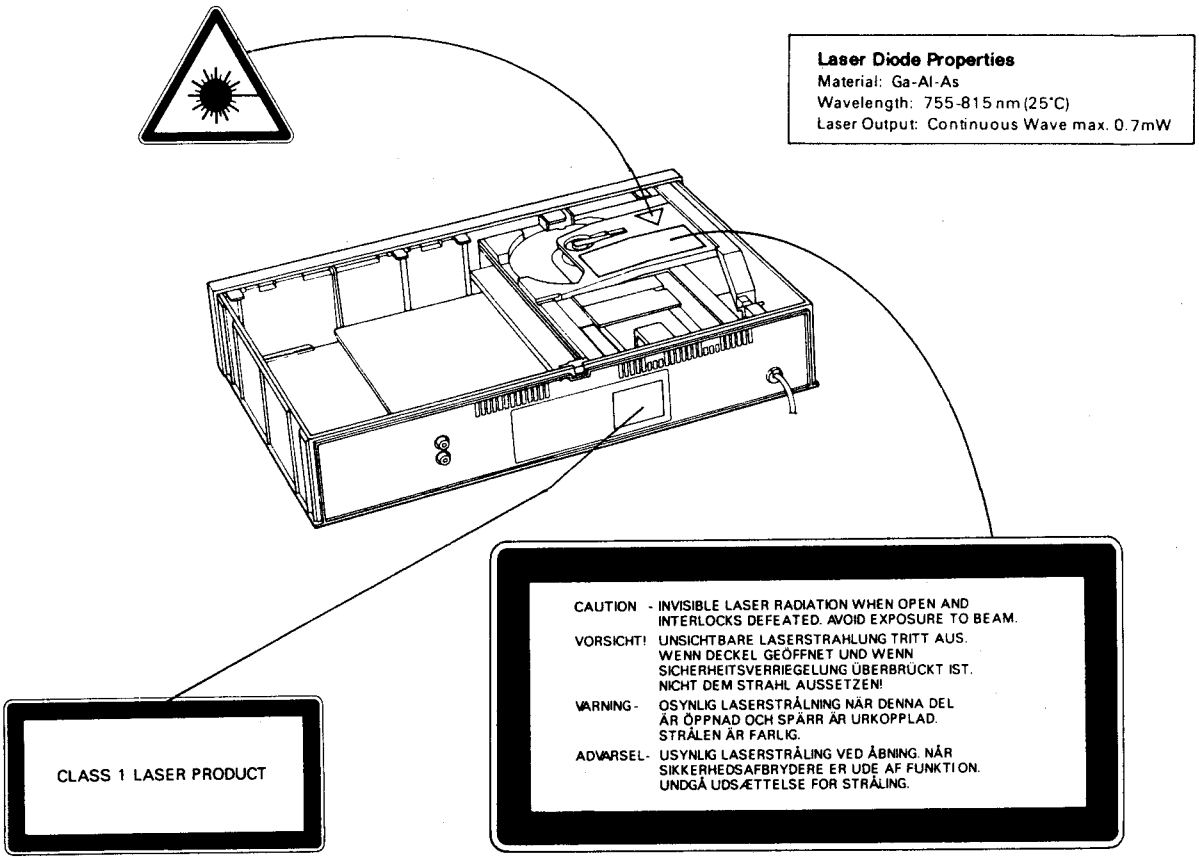
DIGITAL SIGNAL PROCESSING	
Optical Pickup	3-beam laser
Error Correction	CIRC
Sampling Frequency	44.1kHz
D/A Conversion	16-bit linear
Filter	Digital filter + (4-pole LC filter)
GENERAL	
Power Source	120V, 60Hz (U.S.A/CANADA) 220V, 50Hz (EUROPE) 240V, 50Hz (AUSTRALIA) 110/220V, 50/60Hz (GENERAL EXPORT)
Power Consumption	9 Watts
Dimensions (W×H×D)	435 × 85.5 × 290mm
Weight	3.5kg

FUNCTIONAL BLOCK DIAGRAM



SAFETY CERTIFICATION

This Compact Disc Player is made and tested to meet exacting safety standards.

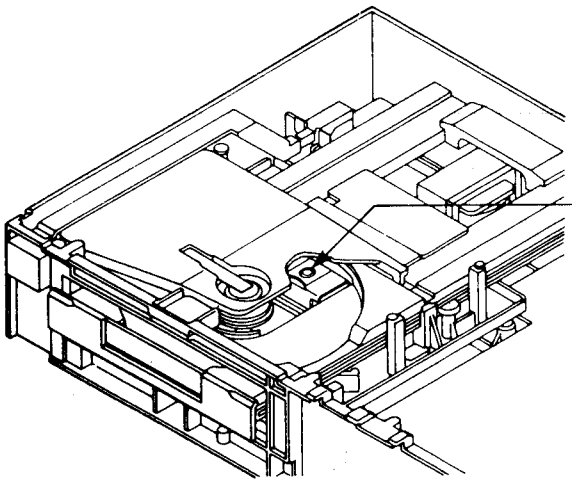


CAUTION – USE OF CONTROLS OR ADJUSTMENTS OR PERFORMANCE OF PROCEDURES OTHER THAN THOSE SPECIFIED HEREIN MAY RESULT IN HAZARDOUS RADIATION EXPOSURE.

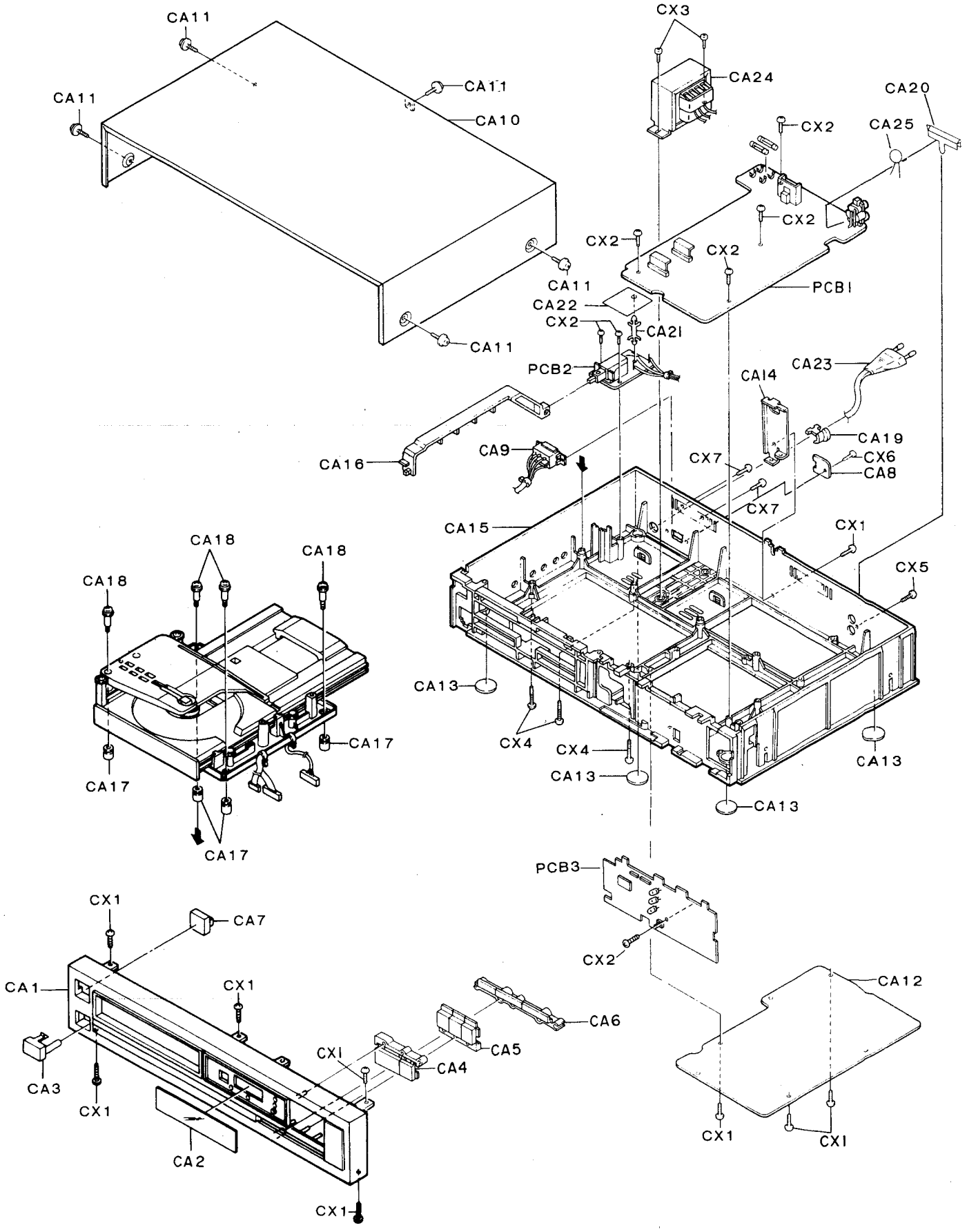
THE COMPACT DISC PLAYER SHOULD NOT BE ADJUSTED OR REPAIRED BY ANYONE EXCEPT QUALIFIED SERVICE PERSONNEL.

LASER BEAM RADIATION SPOT

Optical Pickup Properties
Material: Ga-Al-As
Wavelength: 790μm
Output Power: Max. 1.8mW
Radiant Power: Max. 8μW (Class I)



CABINET & CHASSIS EXPLODED VIEW



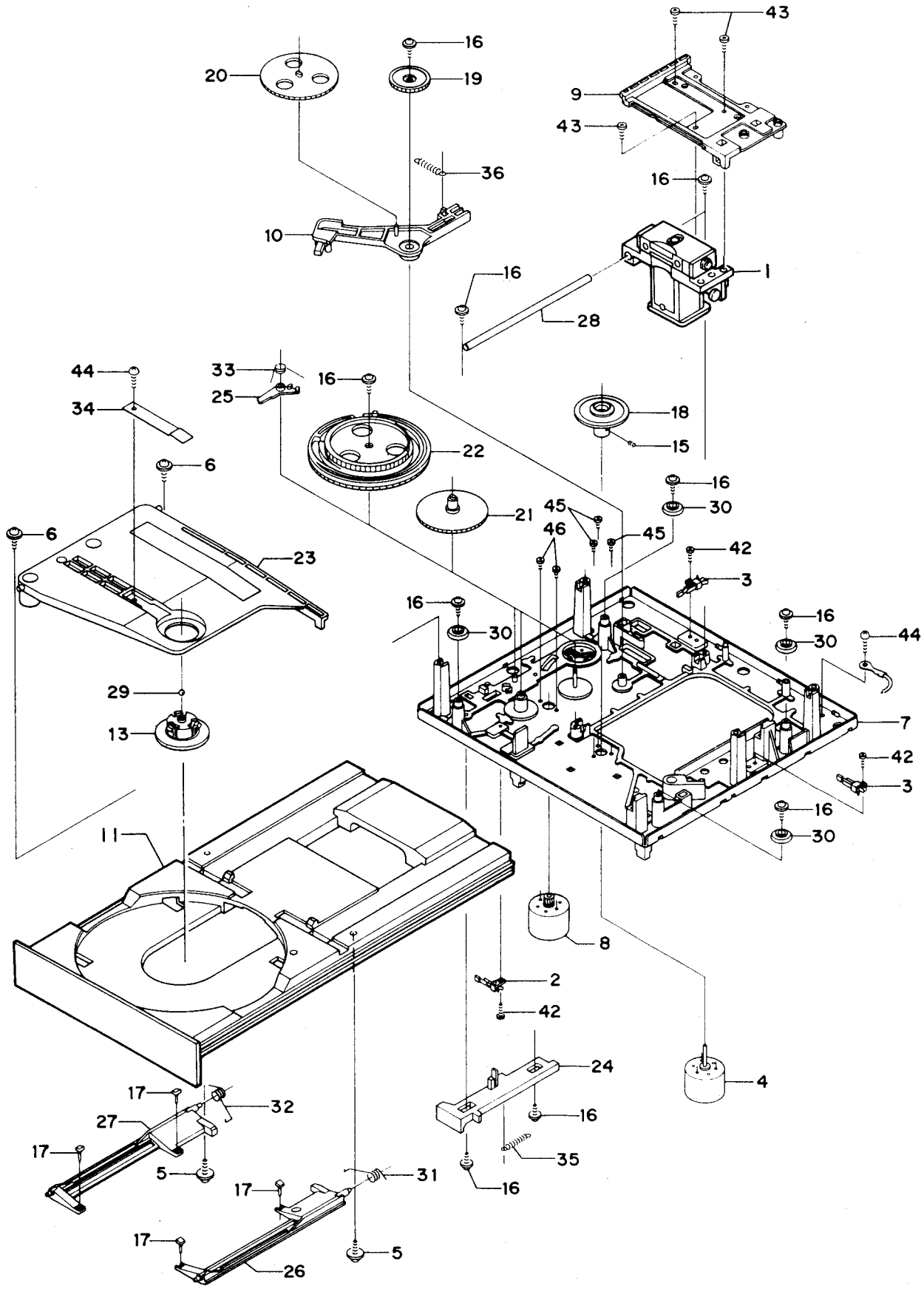
EXPLODED VIEW -1

REF.NO.	PARTS NO.	DESCRIPTION	REMARKS
CA 1	*9A00765600	ESCUTCHEON DIAL	
	*9A00822300	ESCUTCHEON DIAL [SILVER]	
CA 2	*9A00766300	DECORATE PLATE DIAL	
	*9A00822900	DECORATE PLATE DIAL [SILVER]	
CA 3	9A00765800	KNOB EJECT	
	9A00822500	KNOB EJECT [SILVER]	
CA 4	9A00765900	KNOB A	
	9A00822600	KNOB A [SILVER]	
CA 5	9A00766000	KNOB B	
	9A00822700	KNOB B [SILVER]	
CA 6	9A00765700	KNOB C	
	9A00822400	KNOB C [SILVER]	
CA 7	9A00766100	KNOB POWER	
	9A00822800	KNOB POWER [SILVER]	
CA 8	*9A00181500	PLATE PAD SWITCH [GE]	
CA 9	9A00181700	SLIDE SWITCH 3P [GE]	
CA10	*9A00179200	COVER	
CA11	*9A00179800	SCREW PAN HD.TPG-B M3X8	
CA12	*9A00169900	PLATE BOTTOM	
CA13	*9A00170100	LEG	
CA14	*9A00170200	METAL MOUNT COVER	
CA15	*9A00416400	CHASSIS MAIN [US,C,E,A]	
	*9A00442300	CHASSIS MAIN [GE]	
CA16	*9A00170500	SHAFT	
CA17	*9A00170600	CUSHION RUBBER	
CA18	*5760518700	SHAFT	
CA19	⚠ *9A00149600	BUSHING [US,C,GE]	
	⚠ *9A00182200	BUSHING [E,A]	
CA20	*9A00769700	LUG GROUND [US,E]	
CA21	*9A00182500	MOUNT PCB [A]	
CA22	*9A00182600	SHEET [A]	
CA23	⚠ *5761246800	POWER CORD [GE]	
	⚠ *9A00443300	POWER CORD [E]	
	⚠ *9A00767400	POWER CORD [US,C]	
	⚠ *9A00770100	POWER CORD [A]	
CA24	⚠ 9A00767500	POWER TRANS [US,C]	
	⚠ 9A00769300	POWER TRANS [GE]	
	⚠ 9A00769600	POWER TRANS [E]	
	⚠ 9A00770200	POWER TRANS [A]	
CA25	9A00769800	C. CERAMIC 0.022/50V [US,E]	
PCB1	*9A00768500	MAIN PCB ASSY [US,C]	
	*9A00768510	MAIN PCB ASSY [GE,E,A]	
PCB2	*9A00768700	POWER SWITCH PCB ASSY	
PCB3	*9A00768600	CONTROL PCB ASSY	
CX1	*9A00767100	SCREW S-TPG BRZ M3X8	
CX2	*9A00766700	SCREW S-TPG BRZ M3X8	
CX3	*9A00767000	SCREW S-TPG BIN M4X10	
CX4	*9A00171700	SCREW TRANSIT	
CX5	*9A00767200	SCREW S-TPG BRZ M3X10	
CX6	*9A00181400	SCREW PAN M3x8 [GE]	
CX7	*9A00767300	SCREW S-TPG BRZ M3X14	

[US]:U.S.A. [C]:CANADA [GE]:GENERAL EXPORT [E]:EUROPE
[A]:AUSTRALIA

Parts marked with *require longer delivery time.

MECHANISM EXPLODED VIEW



EXPLODED VIEW -2

REF.NO.	PARTS NO.	DESCRIPTION	REMARKS
1	9A00567000	PICK-UP ASSY	
2	9A00171900	LEAF SWITCH	
3	9A00172000	LEAF SWITCH	
4	9A00172100	MOTOR	
5	*9A00172200	SCREW (B TITE SEMS)	
6	*5760707700	SCREW (B TITE SEMS) Z	
7	*9A00172300	CHASSIS ASSY	
8	9A00172600	GEAR MOTOR ASSY	
9	*9A00172800	SLIDE BASE PICK-UP ASSY T	
10	*9A00173000	LEVER LOCK ASSY	
11	*9A00767800	TABLE LOAD	
	*9A00823300	TABLE LOAD [SILVER]	
13	*9A00173500	HOLDER DISK	
15	*9A00173700	SET SCREW V-CONE 2X4	
16	*9A00173800	SCREW WASHER	
17	*9A00173900	PAD DISK	
18	9A00174000	TURNTABLE	
19	9A00174100	GEAR PINION	
20	9A00174200	GEAR PICK-UP	
21	9A00174300	GEAR LOAD	
22	9A00174400	GEAR CAM	
23	*9A00174500	FLAP DISK CRAMP	
24	*9A00174600	SLIDE EJECT	
25	*9A00174700	LEVER STOP	
26	*9A00175300	LEVER HOLD DISK RIGHT	
27	*9A00175400	LEVER HOLD DISK LEFT	
28	*9A00175500	SHAFT PICK-UP	
29	*9A00175600	BALL	
30	9A00175700	ROLLER TABLE LOAD	
31	*9A00175800	SPRING LEVER RIGHT	
32	*9A00175900	SPRING LEVER LEFT	
33	*9A00176000	SPRING LEVER STOP	
34	*9A00176100	SPRING PLATE	
35	*9A00176200	SPRING SLIDE EJECT	
36	*9A00176300	SPRING LEVER LOCK	
	9A00823100	CD MECHA ASSY 86	
42	*9A00767900	SCREW S-TPG BIN M2X6	
43	*9A00768000	SCREW BIN M2.6X4	
44	*9A00768100	SCREW S-TPG BRZ M3X6	
45	*9A00768200	SCREW PAN PCS MI.7X2.5	
46	*9A00768300	SCREW PAN PCS MI.7X2	

INCLUDED ACCESORIES

REF.NO.	PARTS NO.	DESCRIPTION	REMARKS
	*9A00768800	OWNERS MANUAL [C,GE,E,A]	
	*9A00781000	OWNERS MANUAL [US]	
	*9A00768900	PLUG CORD	

[US]:U.S.A. [C]:CANADA [GE]:GENERAL EXPORT [E]:EUROPE
[A]:AUSTRALIA

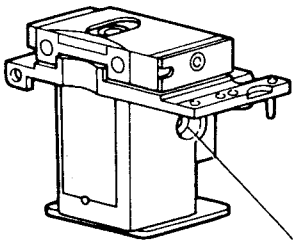
Parts marked with *require longer delivery time.

ADJUSTMENT PROCEDURES

CAUTION:
Avoid eye exposure to invisible laser beam which is emitted from laser pickup.

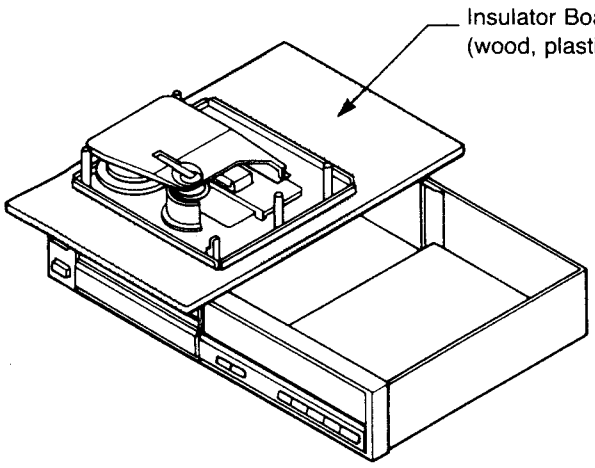
PRECAUTIONS REGARDING ADJUSTMENT

- Adjustment is performed in the indicated order.
- When adjustment is made for one item, check the other items which follow.
- The laser pick-up has already been precisely adjusted. Do not touch its mounting screws or controls.



Laser power control knob
– Do not adjust.

- When the diffraction grid is adjusted, remove the mechanism. It is convenient to place an insulating panel on top of the chassis and then to place the mechanism on top of this. (The wires are connected.)



Insulator Board
(wood, plastic etc.)

- Refer to the adjustment diagram for the test points and adjustment controls.
- The ground point for the measurement equipment is the test point indicated as **GND**.

REQUIRED EQUIPMENTS

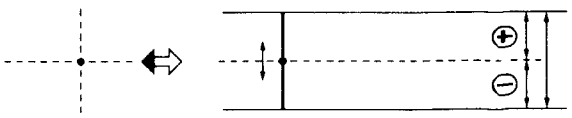
- DC Voltmeter
- Dualtrace Oscilloscope
- Frequency Counter
- Signal Generator
- Plastic Screwdriver
- Diffraction Grating Adjustment Jig
- Test Disc (SONY:YEDS4)

CHECKING FOCUS ERROR SIGNAL

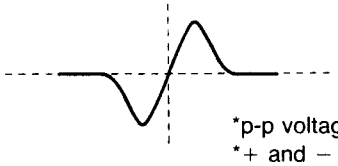
Checking the focus error signal of the pick-up allows for an evaluation of the pick-up. Be sure this is carried out before repair.

1. Turn on the power and set the unit to the STOP mode.
2. Connect an oscilloscope between test pin **FE** of connector CN7 and test pin **GND** (Set the time axis to 0.5 seconds/division.)
3. Connect test pin **GND** to the collector of Q125.
4. Press the OPEN/CLOSE button and place the test disk YEDS4 on the table load. Press the OPEN/CLOSE button again.
5. The waveform shown below is displayed six times on the oscilloscope when the table load closes. Check that the p-p voltage is about 2.5V and that the top and bottom of the waveform are symmetrical.

Repeated six times



(When recorded on a memory scope)



*p-p voltage of 2.5V
*+ and – voltage roughly same

ADJUSTMENT PROCEDURES (Continued)

6. The waveform appears again if the OPEN/CLOSE button is pressed again. This allows for confirmation to be made. The pick-up is faulty if confirmation cannot be made.

SETTING OF INITIAL POSITION OF VOLUME

The variable resistors are set to the following initial positions.

P102 (FOCUS OFFSET) .....Mechanical center
P103 (FOCUS GAIN) .....Mechanical center
P104 (TRACKING GAIN) .....Mechanical center
P105 (TRACKING OFFSET) ...Mechanical center
P106 (E/F BALANCE) .....Mechanical center

FREE RUN FREQUENCY ADJUSTMENT

1. Turn on the power and set the unit to the STOP mode.
2. Connect the frequency counter between test pins **VCO** and **GND** (use probes).
3. Short test pins **EFM** and **GND**.
4. Rotate the core of the PLL coil (T101) with a plastic screwdriver so that the frequency counter indicates 4.3218±10KHz.

FOCUS OFFSET ADJUSTMENT

1. Turn on the power and set the unit to the STOP mode.
2. Short test pins **FON** and **GND**, and connect a DC voltmeter between test pins **FC** and **GND**.
3. Unload the test disc and adjust P102 so that indication of the DC voltmeter is 0V±50mV.

NOTE:
This adjustment should be made again after the adjustment of Tracking Gain.

TRACKING OFFSET ADJUSTMENT

1. Turn on the power and set the unit to the STOP mode.
2. Short test pins **TON** and **GND** and connect the DC voltmeter between test pins **TC** and **GND**.
3. Unload the test disc and adjust P105 so that indication of the DC voltmeter is 0V±50mV.

NOTE:
This adjustment should be made again after the adjustment of Tracking Gain.

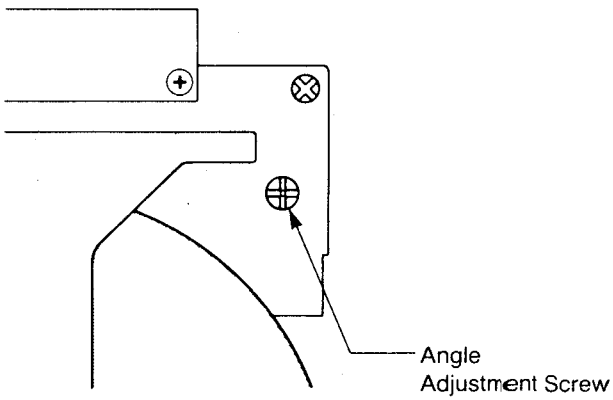
ADJUSTMENT OF DIFFRACTION GRID

The adjustment cannot be made with this unit. When the adjustment is necessary, replace the mechanism including laser pick-up with a new one, or replace the pick-up with an already adjusted one (forwarded by us).

NOTE:
When the pick-up is replaced, it must be replaced as a unit. Never replace only laser diode.

ADJUSTMENT OF PICK-UP ANGLE

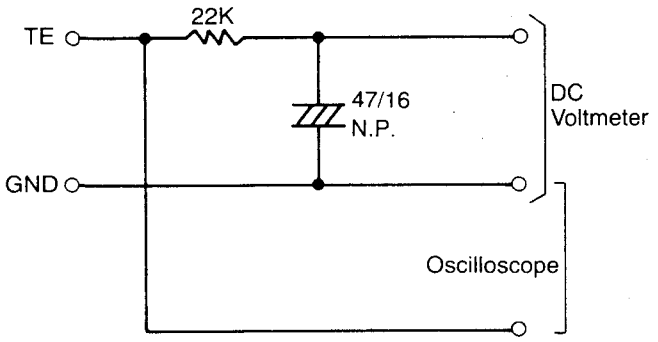
1. Remove the table load.
2. Directly mount test disc YEDS4 on the turntable.
3. Turn on the power and play back the fourth selection.
4. Connect the oscilloscope between test pin **HF** and test pin **GND**. Monitor the waveform of **HF** and rotate the angle adjustment screw so that the waveform is at its maximum.

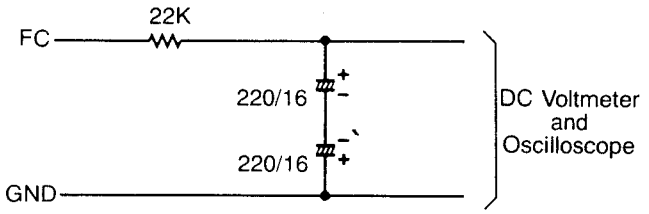


E-F BALANCE ADJUSTMENT

1. Short test pins **DO** and **E3**, and connect an oscilloscope and a DC voltmeter to test pins **TE** and **GND** through the low-pass filter.
2. Mount test disc YEDS4 and set the player to the playback mode. Load +5V to test pin **TON** and turn off the tracking servo.
3. Adjust P106 so that indication of the DC voltmeter is within ±5mV.

ADJUSTMENT PROCEDURES (Continued)





CONFIRMING JITTER

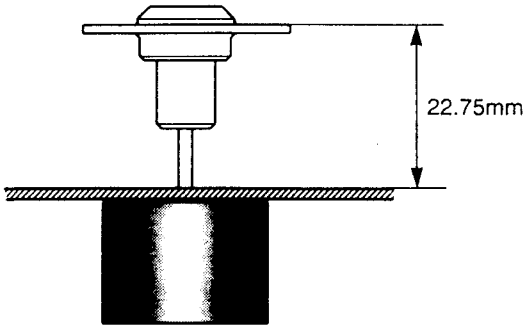
This procedure can be omitted in the case that no jitter counter is equipped.

1. As same in the adjustment of the pickup angle, play the fourth tune of the YEDS4.
2. Connecting the jitter counter to the test point **EFM**, make sure that the value of 3T is less than 25nSec.
3. In the case of 25nSec or more, adjust again the Pick-up Angle and adjust P102.

ADJUSTMENT OF TURNTABLE HEIGHT

This adjustment must be made when the motor is replaced.

1. Attach the turntable so that its top surface is 22.75mm from the top of the chassis.



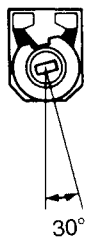
2. Connect test pin **FC** to a DC voltmeter and oscilloscope through the low-pass filter.
3. Turn on the power and play back the first selection on test disk YEDS4.
4. Readjust the height of the turntable if the reading on the DC voltmeter is not in the range of 0V±0.35V. (Increase the height of the turntable when the voltmeter reading is positive, and decrease it when negative.)

ADJUSTMENT OF FOCUS/TRACKING GAIN

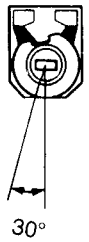
The measurement circuit shown below is necessary for accurate adjustement of the focus and tracking gain. If this circuit cannot be made, make adjustments using the simplified procedure.

Simplified adjustment procedure

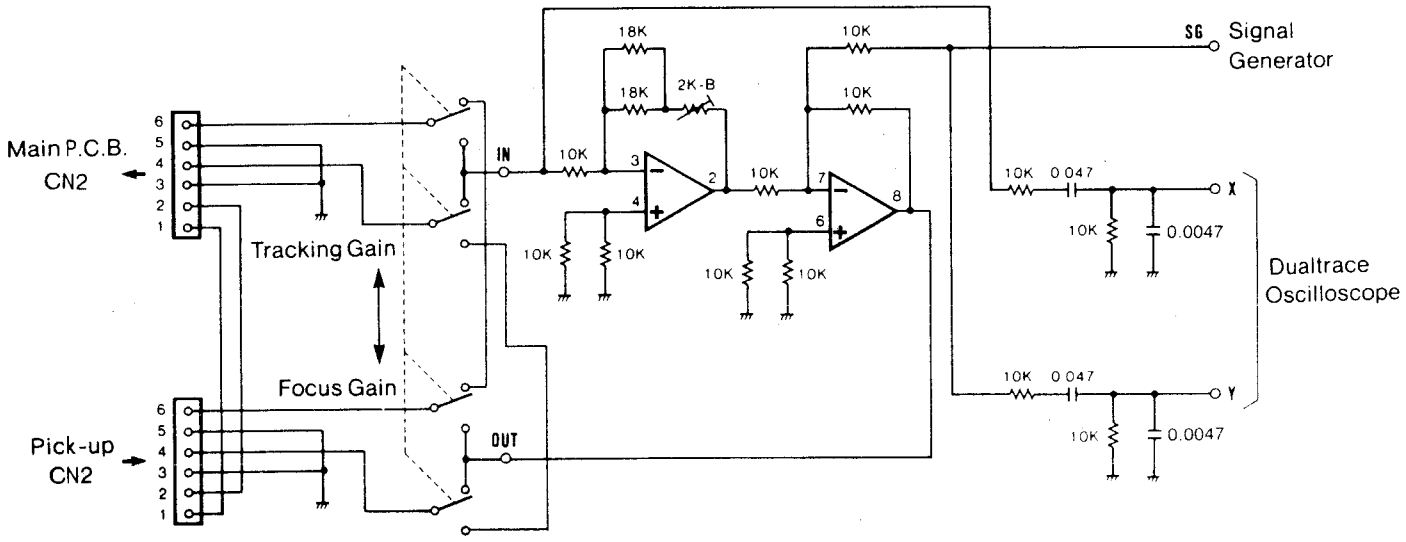
- Focus gain adjustment
  P103 is set to a position 30° from its mechanical center as shown in the diagram below.



- Tracking gain adjustment
  P104 is set to a position 30° from its mechanical center as shown in the diagram below.



ADJUSTMENT PROCEDURES (Continued)



- Remove connector CN2 from the pick-up and connect the measurement circuit between the PCB and pick-up.
- The IC used is TA7256P
- VR control 2kΩ-B shorts **IN** and **SG**, 1kHz 1Vp-p is supplied from the signal generator, and adjustment is made for minimum output from **OUT**.

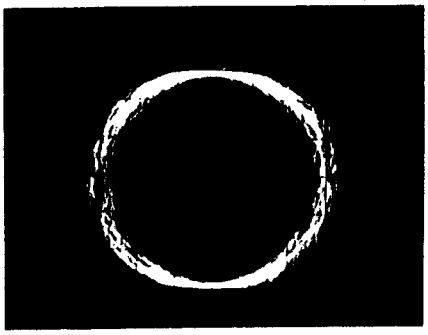
Precise adjustment procedure

- Focus gain adjustment

1. Connect the measurement circuit shown above, turn on the power, and mount the test disk YEDS4.

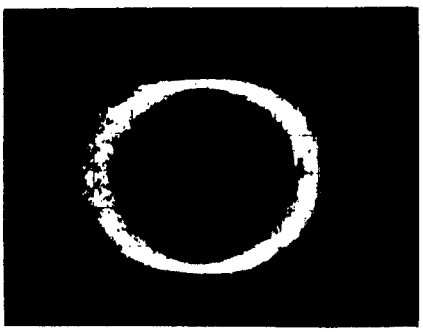
2. Playback the first selection on the test disk, and apply a 950 Hz 0.5Vp-p signal from the signal generator.

3. Observe the resurge waveforms on the oscilloscipe, and adjust P103 so that the phase difference of outputs **X** and **Y** from the measurement circuit is 90°.

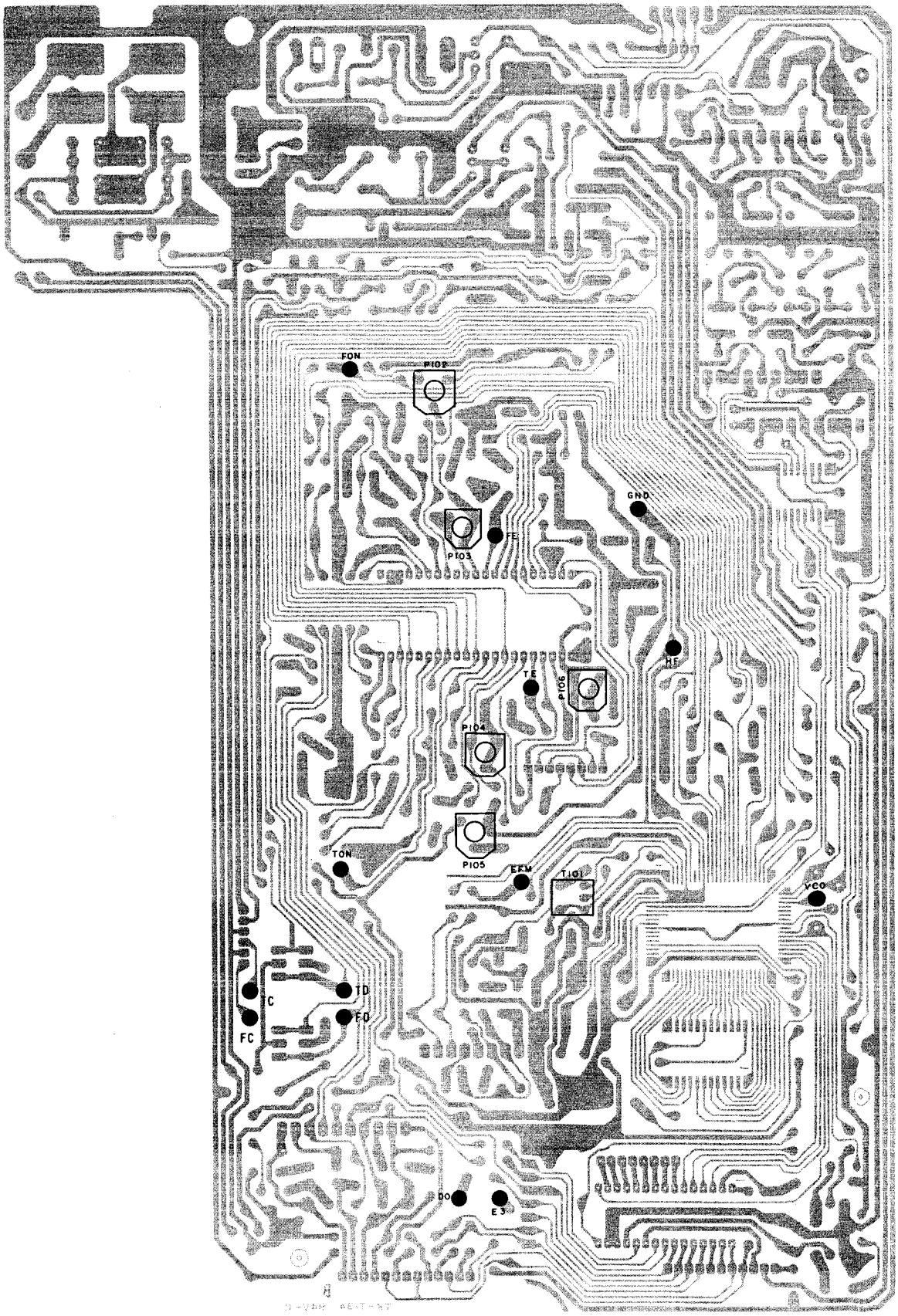


- Tracking gain adjustment

1. Adjustment is made in the same manner as for focus gain. The input from the frequency generator is set to 950Hz 0.5Vp-p, and P104 is adjusted so that the phase difference is 90°.



P.C.BOARD ALIGNMENT POINTS



SAFETY INTERLOCK

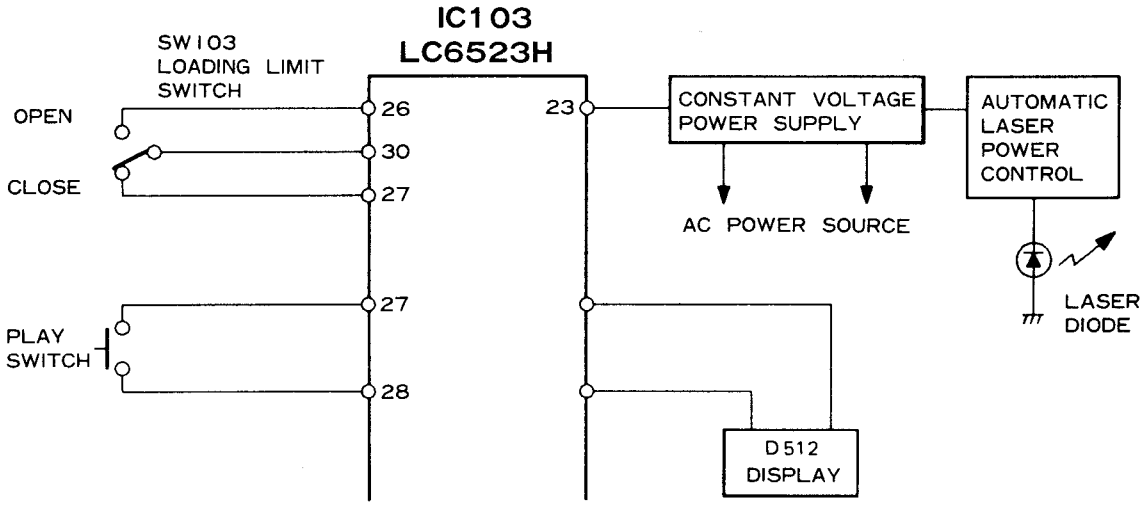
The Digital Compact Disc Player reads the disc signal by detecting the laser beam. It must be avoided for the human body to directly receive the beam. Especially human eyes are badly affected by the beam. Therefore, the unit is equipped with an interlock to prevent the unnecessary laser outputs.

The laser outputs are controlled by the injection or cutoff of the constant voltage source to the laser diode with Pin 23 of IC 103 (LC6523H). When Pin 23 is in "L" (Low) level, the laser emits the beam. When Pin 23 is in "H" (High) level, the laser does not emit the beam.
Pin 23 is set in "H" level when the unit is loaded with the disc and it reads the index signals or when the unit is set in the play mode after that. When the unit reads the index signals and the following two conditions are met, the laser emits the beam.

1) When the Loading Limit Switch is set in "CLOSE" side. (The disc tray is closed.)
2) The pickup is located at the area of the minimum internal circumference.

After the above conditions are met and the index signals have been read, the laser emits the beam when the following two conditions are met.

1) When the PLAY button is pressed.
2) When the PLAY indicator is ON.



NOTES:

1. As regards the resistors and capacitors, refer to the circuit diagrams and the PCB ass'y drawings included in this brochure.
2. Parts marked with ⚠ this sign are safety critical cmponents. They must always be replaced with identical components - refer to the appropriate parts list and ensure exact replacement.

MAIN PCB ASSY

REF.NO.	PARTS NO.	DESCRIPTION
	*9A00768500	MAIN PCB ASSY [US,C]
	*9A00768510	MAIN PCB ASSY [GE,E,A]
	*9A00770300	MAIN PCB
D101,102	9A00774800	DIODE GMA01-BT
D103,104	9A00774900	DIODE DS442-BT
D105-111	9A00774800	DIODE GMA01-BT
D112	9A00774900	DIODE DS442-BT
D113	9A00775000	VARA. DIODE SVC211SP
D114-117	9A00774800	DIODE GMA01-BT
D118	9A00775100	ZENER DIODE GZA7.5X
D119,120	9A00775200	ZENER DIODE GZA6.8X
D121-124	9A00775300	DIODE MPG06B-G3
D125	9A00775400	ZENER DIODE GZA2.4X-BT
IC101	9A00775600	IC XC488A0
IC102	9A00775700	IC YM3805
IC103	9A00775800	IC LC6523H-3043
IC104,107	9A00775900	IC NJM2068S-D
IC105	9A00776000	IC YM3015
IC106	9A00776100	IC CXK5816M-15L
IC108,109	9A00775900	IC NJM2068S-D
IC110	9A00776800	IC 7256P
IC111	9A00776900	IC L78M05
IC112	9A00777100	IC L79M05
Q101,102	9A00777500	TRANSISTOR 2SC536-F-NP
Q103,105	9A00777600	TRANSISTOR 2SD1227-M
Q104,106	9A00777700	TRANSISTOR 2SB911-M
Q107,108	9A00777500	TRANSISTOR 2SC536-F-NP
Q111,112	9A00777500	TRANSISTOR 2SC536-F-NP
Q113,117	9A00777800	TRANSISTOR 2SA608-E-NP
Q114,115	9A00777500	TRANSISTOR 2SC536-F-NP
Q116,118	9A00777900	TRANSISTOR 2SD734-E-K
Q119	9A00778000	TRANSISTOR 2SD612-E
Q120	9A00778100	TRANSISTOR 2SB698-E
Q121-125	9A00777500	TRANSISTOR 2SC536-F-NP
C167,168	9A00774000	C. ELEC 2200MF/16V
R216	9A00193400	R. FUSEIBLE 10 1/2W [US]
R216	9A00780100	R. FUSEIBLE 4.7 1/4W [GE]
R219,221	9A00193400	R. FUSEIBLE 10 1/2W [US]
R219,221	9A00780100	R. FUSEIBLE 4.7 1/4W [GE]
RB101	9A00779000	RM7 103J
P102,105	9A00777300	POTENTIOMETER 20K(B)
P103,104	9A00777400	POTENTIOMETER 100K(B)
P106	9A00777400	POTENTIOMETER 100K(B)
T101	9A00191500	COIL OSC
T102,103	9A00779100	AF FILTER

MAIN PCB ASSY

REF.NO.	PARTS NO.	DESCRIPTION
CN 1	9A00187900	PLUG 8P
CN 2	9A00188000	PLUG 6P
CN 3	9A00188100	PLUG 12P
X101	9A00198000	CRYSTAL
W101	9A00779200	CONNECTOR IP ASSY
	9A00780000	FUSE T500MA [GE,E,A]
	*9A00198400	FUSE CLIP
	*9A00770400	COVER SEVER'
	*9A00770500	PLATE HEAT SINK
	*5760526600	PLATE HEAT SINK
	*9A00183000	PIN JACK 2P
	*5761259300	WIRE WRAP TERMINAL

CONTROL PCB ASSY

REF.NO.	PARTS NO.	DESCRIPTION
	*9A00768600	CONTROL PCB ASSY
	*9A00779400	CONTROL PCB
D501-508	9A00774900	DIODE DS442-BT
D509	9A00779600	LED SLR-54MC3
D510,511	9A00779700	LED SLR-54VC3
D512	9A00779800	LED LB402DA
Q501,502	9A00778100	TRANSISTOR 2SB698-E
S501-508	9A00438700	TACT SWITCH
CN 6	9A00779500	CONECTOR 8P ASSY
CN 7	9A00780200	CONECTOR 11P ASSY

POWER SWITCH PCB ASSY

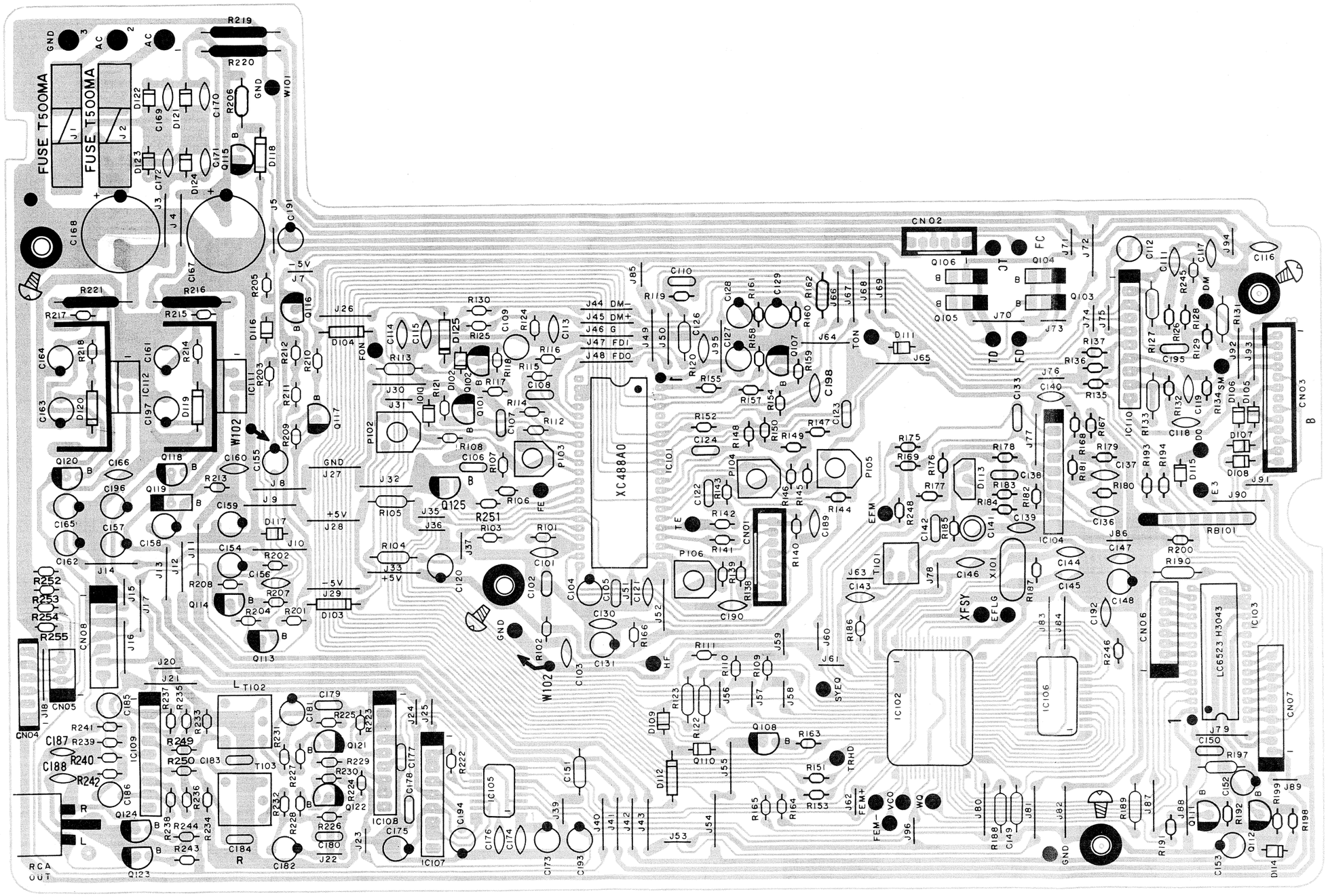
REF.NO.	PARTS NO.	DESCRIPTION
	*9A00768700	POWER SWITCH PCB ASSY
	*9A00779900	POWER PCB
S301	⚠9A00201500	POWER SWITCH
C301	⚠9A00201600	SPARK KILLER 0.01MF/400V
	*5760663000	EC TERMINAL 1P
	*5761259300	WIRE WRAP TERMINAL

[US]:U.S.A. [C]:CANADA [GE]:GENERAL EXPORT [E]:EUROPE
[A]:AUSTRALIA

Parts marked with require longer delivery time.

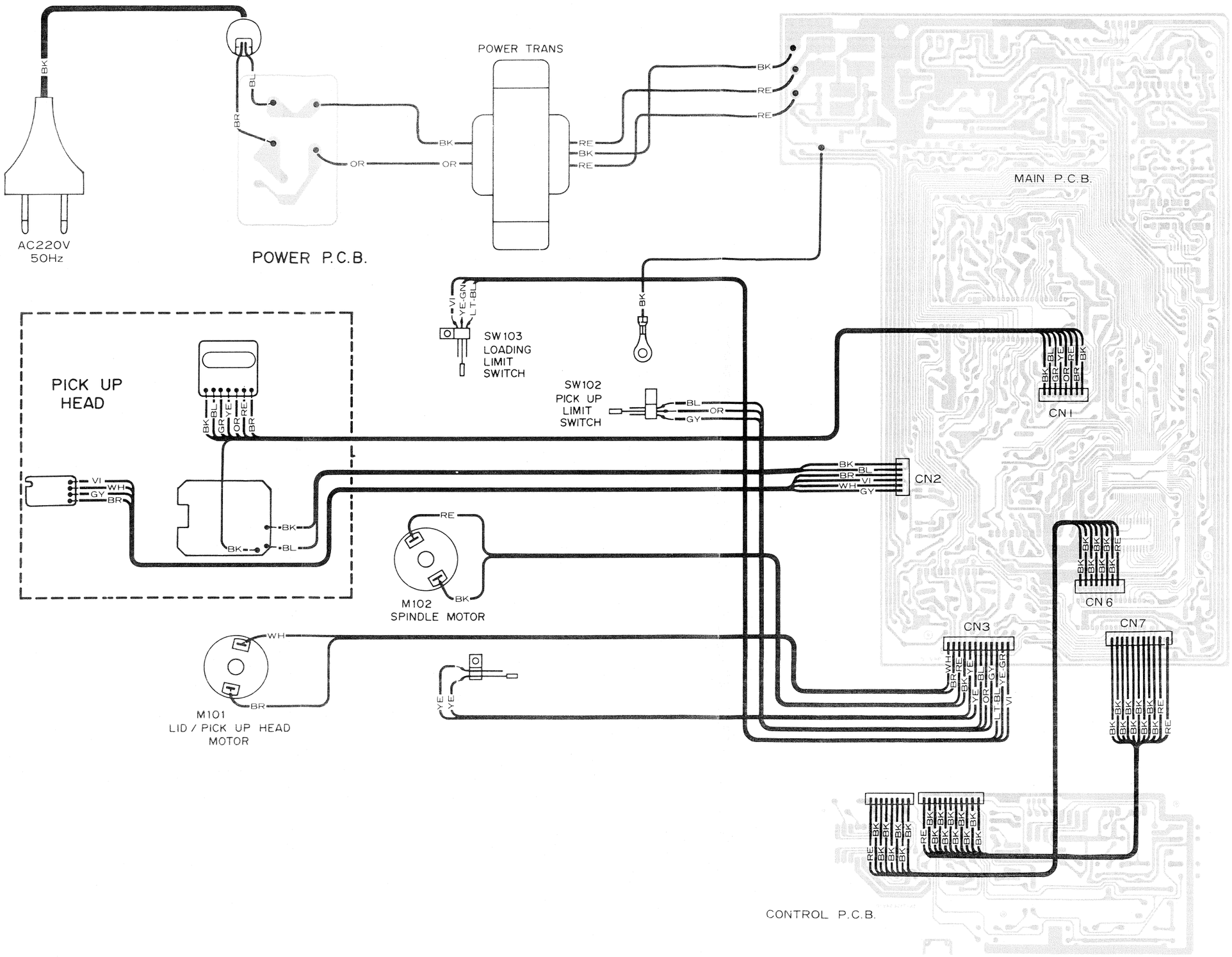
MAIN P.C.BOARD

(BOTTOM VIEW)

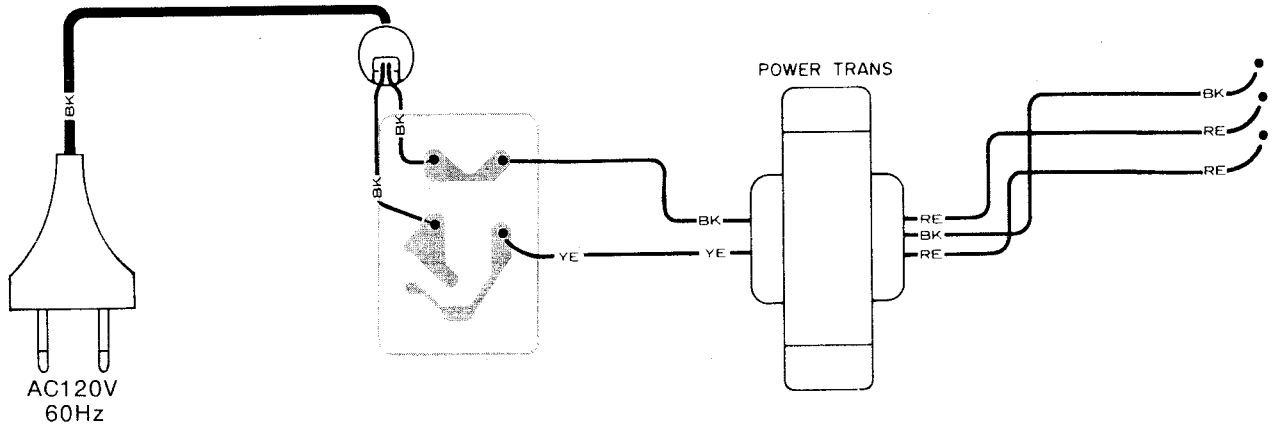


POINT TO POINT WIRING DIAGRAM

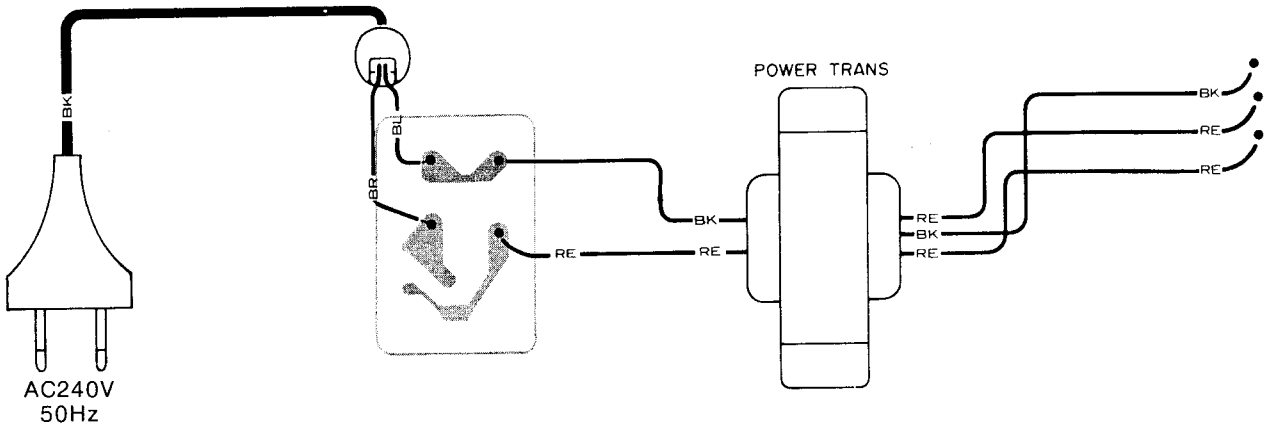
EUROPE



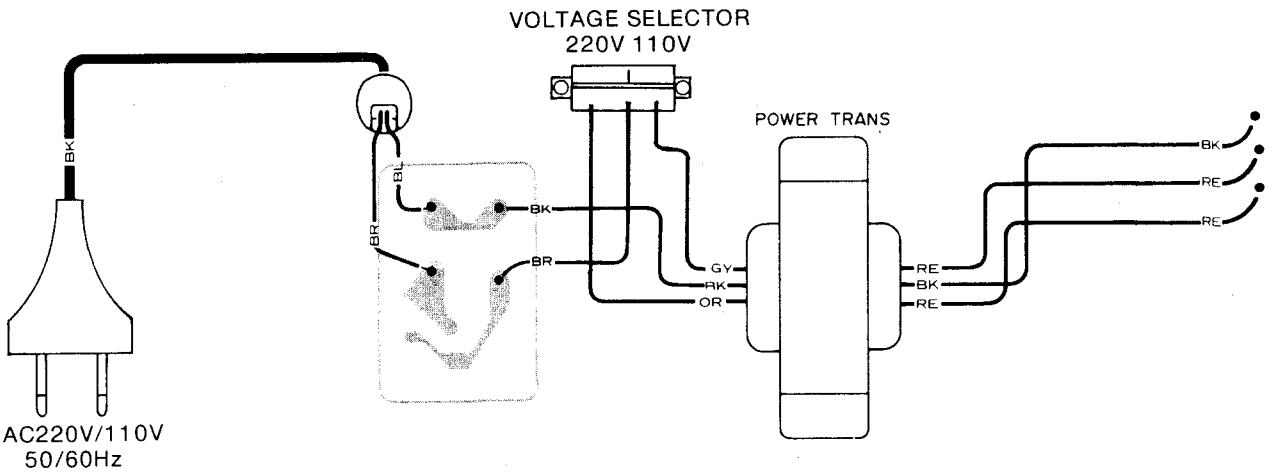
U.S.A. & CANADA



AUSTRALIA

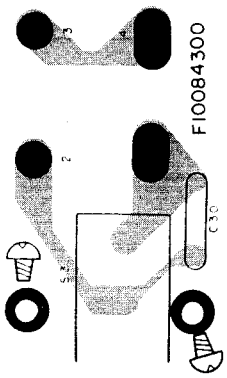


GENERAL EXPORT



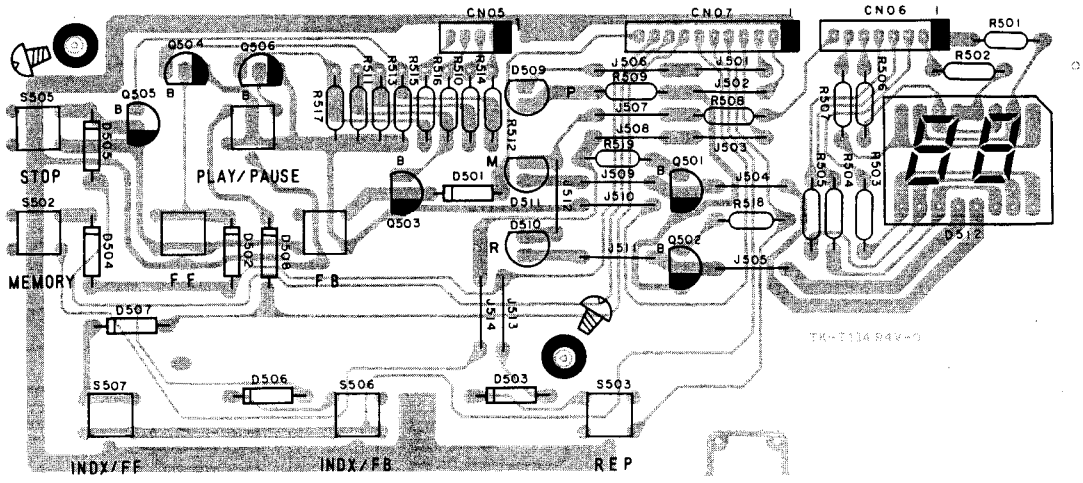
POWER SWITCH P.C.BOARD

(BOTTOM VIEW)

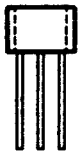
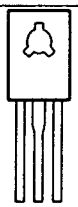


CONTROL P.C.BOARD

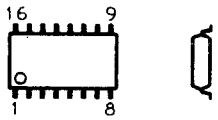
(BOTTOM VIEW)



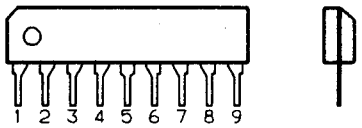
IC & TRANSISTOR LEAD IDENTIFICATION

TRANSISTOR	FRONT VIEW	BOTTOM VIEW
2SA608 2SB698 2SC536 2SD734	 E C B	 E C B
2SC3400 2SD1012	 E C B	 E C B
2SA937	 E C B	 E C B
2SD612	 E C B	 E C B
TERMINAL NAME		
B → BASE C → COLLECTOR E → EMITTER		

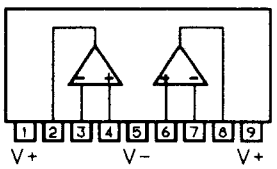
YM3015 TOP/SIDE VIEW



NJM2068/FRONT/SIDE VIEWS

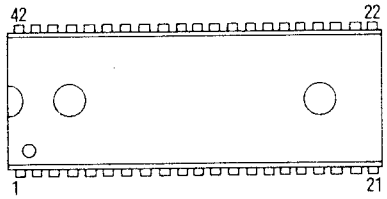


NJM2068 BLOCK DIAGRAM

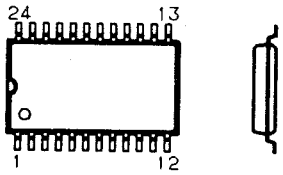


IC & TRANSISTOR LEAD IDENTIFICATION

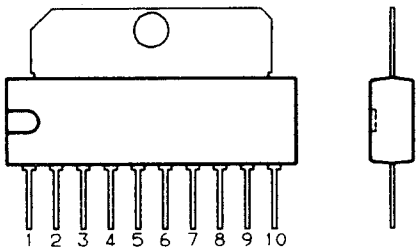
XC488A0 TOP VIEW



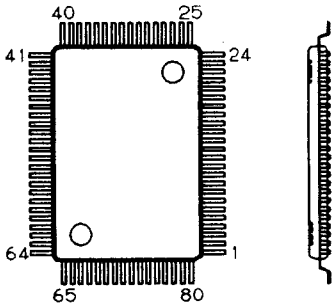
HM6116 TOP/SIDE VIEW



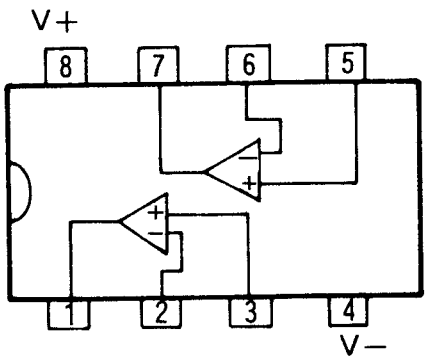
TA7256P FRONT/SIDE VIEW



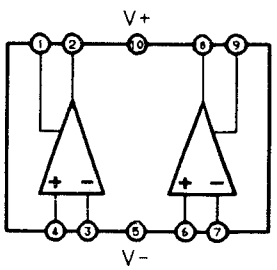
YM3805 TOP/SIDE VIEW



NJM4556 BLOCK DIAGRAM

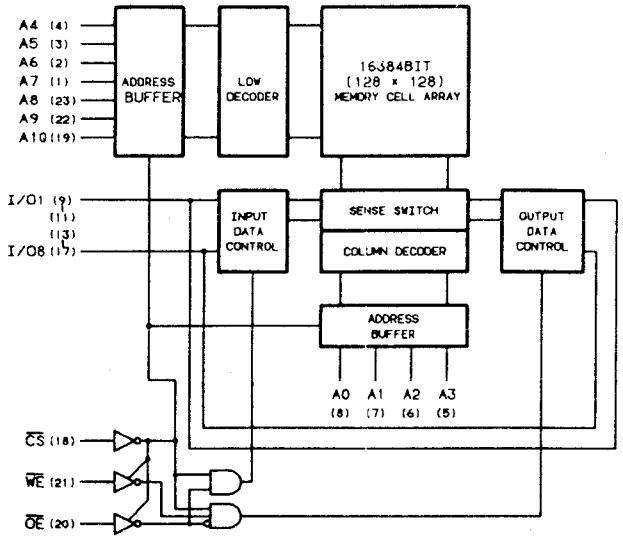


TA7256P BLOCK DIAGRAM

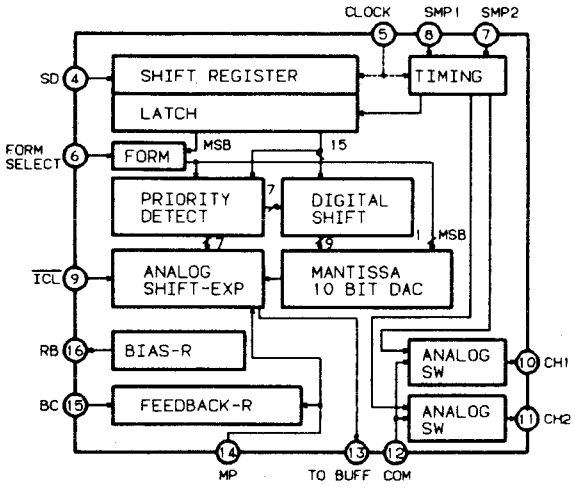


IC & TRANSISTOR LEAD IDENTIFICATION

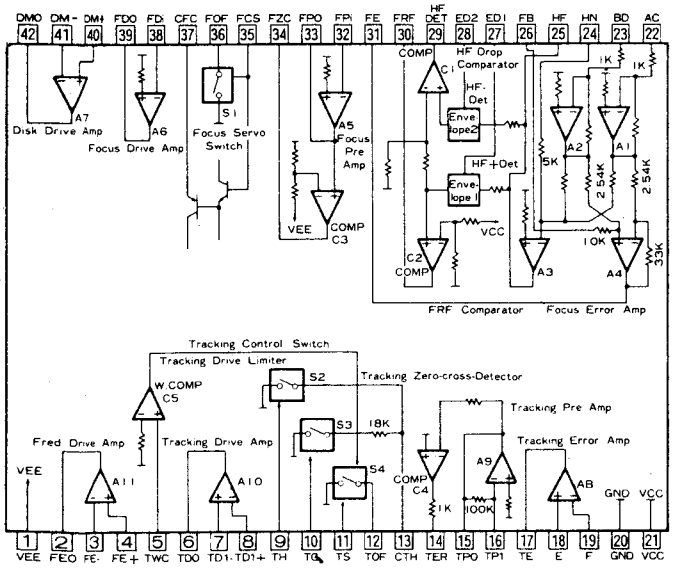
HM6116 BLOCK DIAGRAM



YM3015 BLOCK DIAGRAM



XC488A0 BLOCK DIAGRAM



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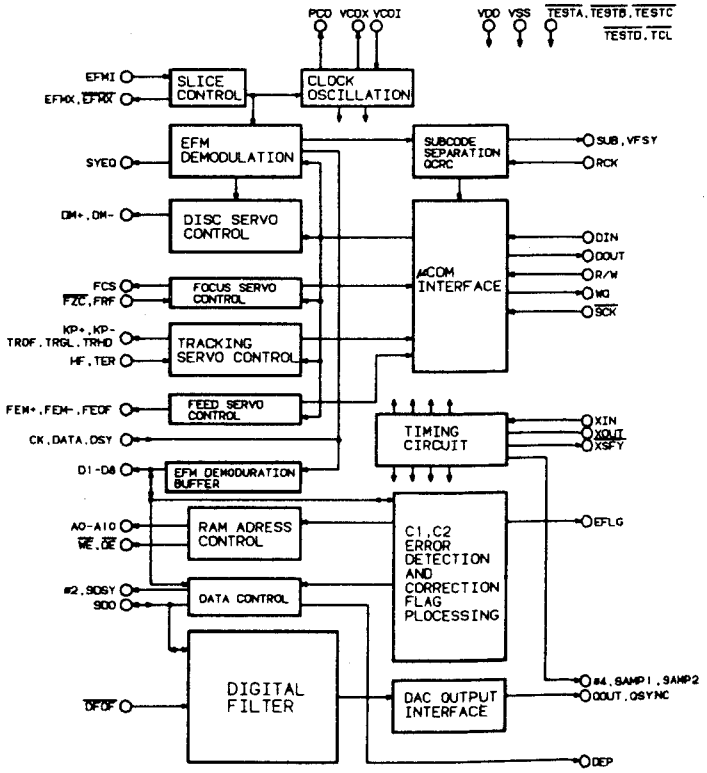
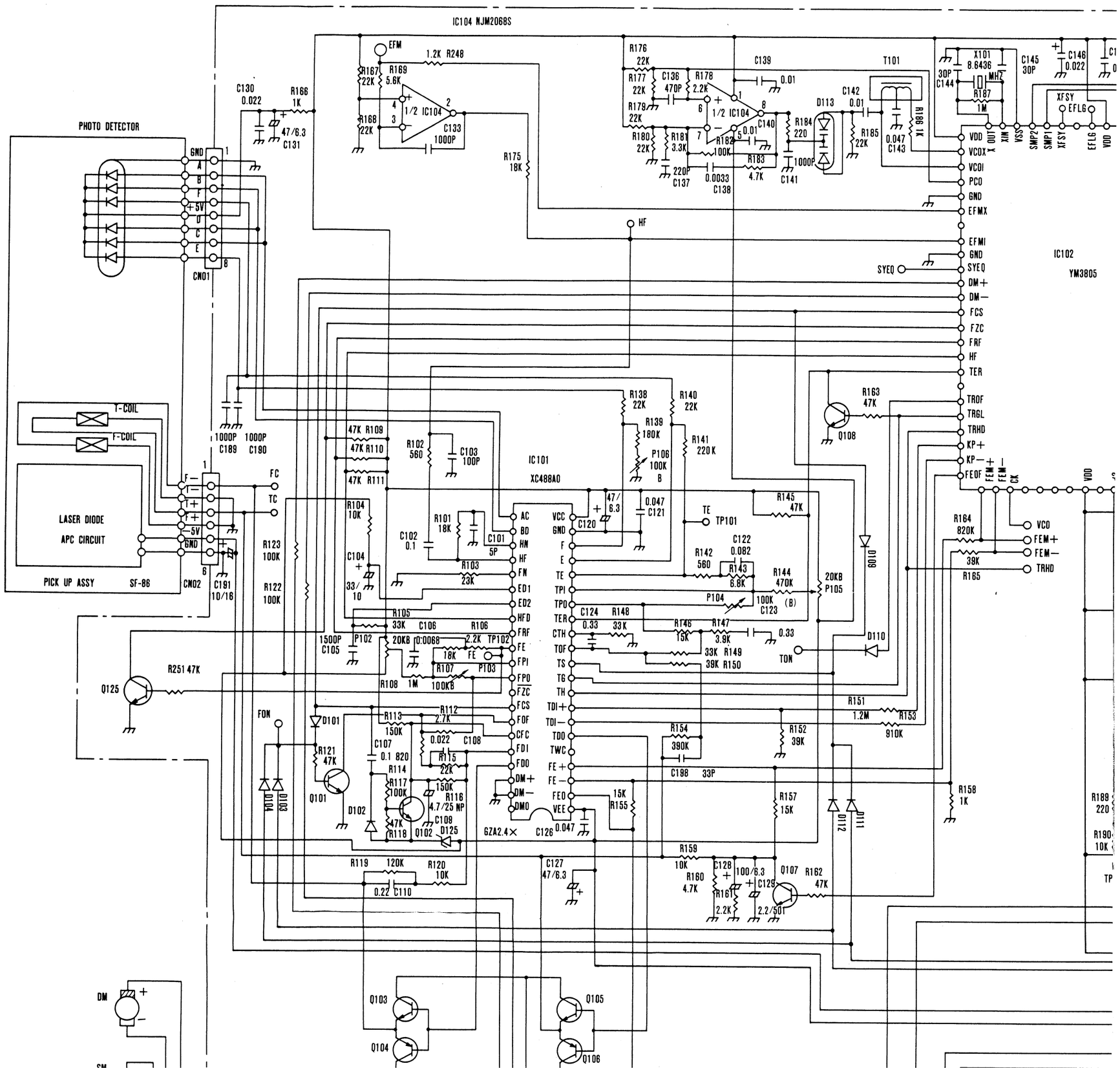
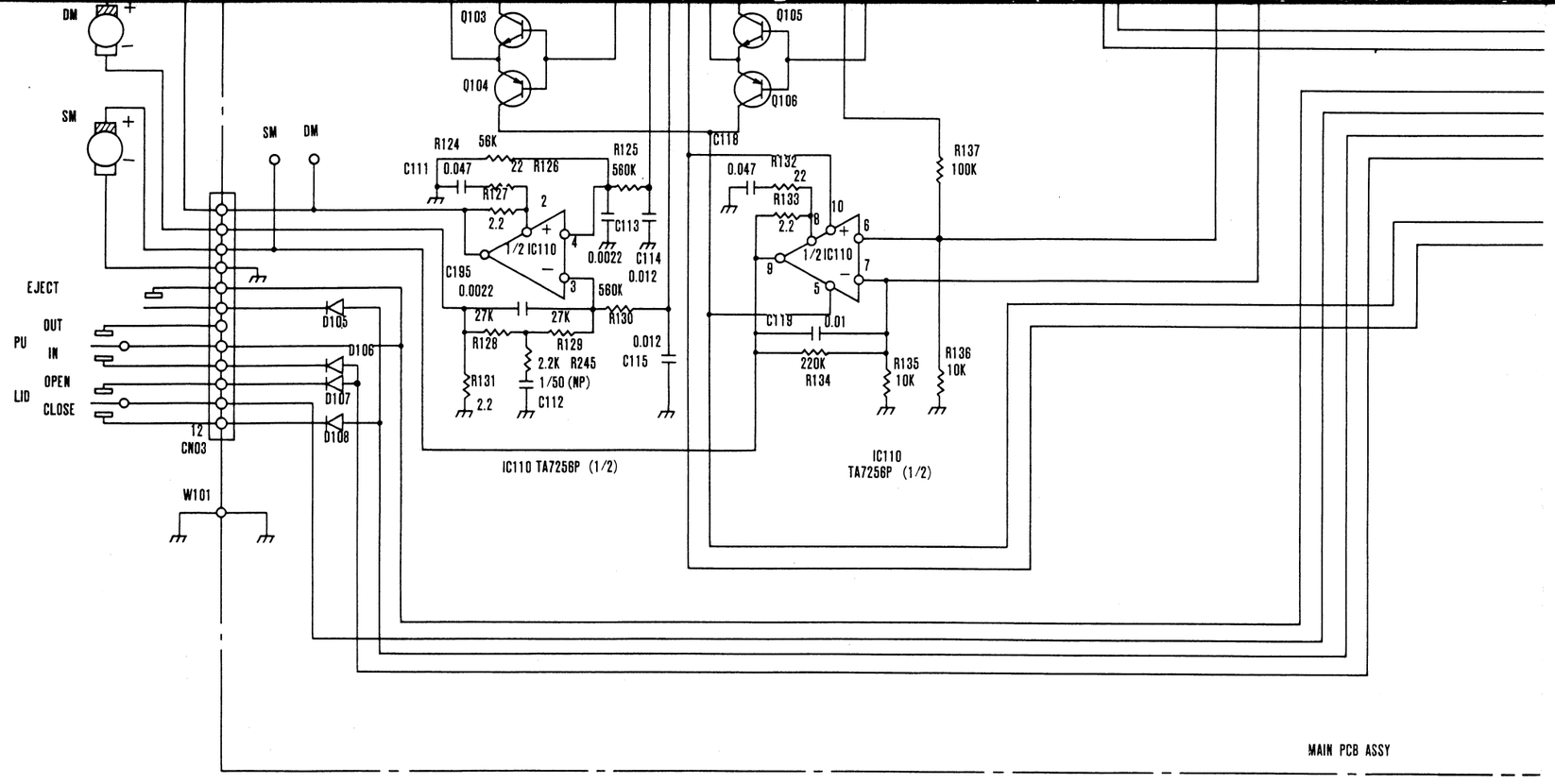



IC104 NJM2068S
EFM
1.2K R248
R167 22K
R169 5.6K
R168 22K
1/2 IC104
C133 1000P
C130 0.022
R166 1K
47/6.3 C131
R175 18K
R176 22K
R177 22K
R179 22K
C136 470P
R178 2.2K
C139 0.01
T101
D113
C142 0.01
R185 22K
R184 220
1000P C141
R180 22K
R181 3.3K
220P C137
R182 100K
0.0033 C138
C140 0.01
R183 4.7K
R186 1K
0.047 C143
X101 8.6436 MHZ
30P C144
C145 30P
C146 0.022
R187 1M
XFSY
EFLG
VDD
VCOX
VCOI
PCO
GND
EFMX
EFMI
SYEQ
DM+
DM—
FCS
FZC
FRF
HF
TER
TROF
TRGL
TRHD
KP+
KP—
FEOF
FEM+
FEM—
CK
VCO
TRHD
IC102
YM3805
HF
SYEQ
PHOTO DETECTOR
GND
+5V
CN01
R138 22K
R139 180K
R140 22K
R141 220K
P106 100K B
R163 47K
Q108
T-COIL
F-COIL
1000P C189
1000P C190
47K R109
47K R110
47K R111
R102 560
C103 100P
IC101
XC488A0
LASER DIODE
APC CIRCUIT
PICK UP ASSY SF-86
CN02
FC
TC
R123 100K
R122 100K
C191 10/16
R104 10K
C104 33/10
R101 18K
C102 0.1
C101 5P
R103 23K
47/6.3 C120
0.047 C121
TE
TP101
R145 47K
C122 0.082
R142 560
R143 6.8K
R144 470K
20KB P105
P104 100K (B)
C123
D108
R164 820K
39K R165
VCO
FEM+
FEM—
TRHD
R105 33K
C106
R106
1500P C105
P102
20KB
0.0068
2.2K TP102
18K FE
R107 P103
R108 1M 100KB
C124 0.33
R148 33K
R146 15K
R147 3.9K
0.33
33K R149
39K R150
TON
D110
R251 47K
Q125
FON
D101
R113 150K
R112 2.7K
0.022 C108
C107 0.1
820 R114
R115 22K
R117 100K
150K R116
4.7/25 NP
47K R118
Q102
D125
C109
D104
D103
Q101
D102
GZA2.4×
C126 0.047
R151 1.2M
R153 910K
R154 390K
R152 39K
C188 33P
R158 1K
R157 15K
D112
D111
R155 15K
R119 120K
R120 10K
0.22 C110
C127 47/6.3
R159 10K
R160 4.7K
C128 100/6.3
R161 2.2K
C129 2.2/50V
Q107
R162 47K
R189 220
R190 10K
DM
SM
Q103
Q104
Q105
Q106



IC PIN NUMBERS DC VOLTAGES

SYMBOL No.	DEVICE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
IC101	XC488AO	-5.0V	0.1V	0V	0V	0.2V	-0.6V	0V	0V	0V	5.0V	3.0V	0V	0V	0V	0V	0V	0V	0V	0V	0V	5.1V
IC103	LC6523H	3.8V	5.1V	0V	0V	5.1V	5.1V	1.6V	0.9V	0.9V	1.6V	1.6V	1.6V	1.9V	1.9V	0V	1.9V	0V	0V	5.1V	0V	3.1V
SYMBOL No.	DEVICE	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42
IC101	XC488AO	0V	0V	0V	0V	0V	-1.2V	1.1V	4.8V	0V	0.1V	0V	0V	0.9V	0V	0V	0V	0V	-0.6V	0V	0V	-4.5V
IC103	LC6523H	3.0V	3.6V	5.1V	5.1V	5.1V	4.0V	3.8V	3.8V	3.9V												

IC PIN NUMBERS DC VOLTAGES

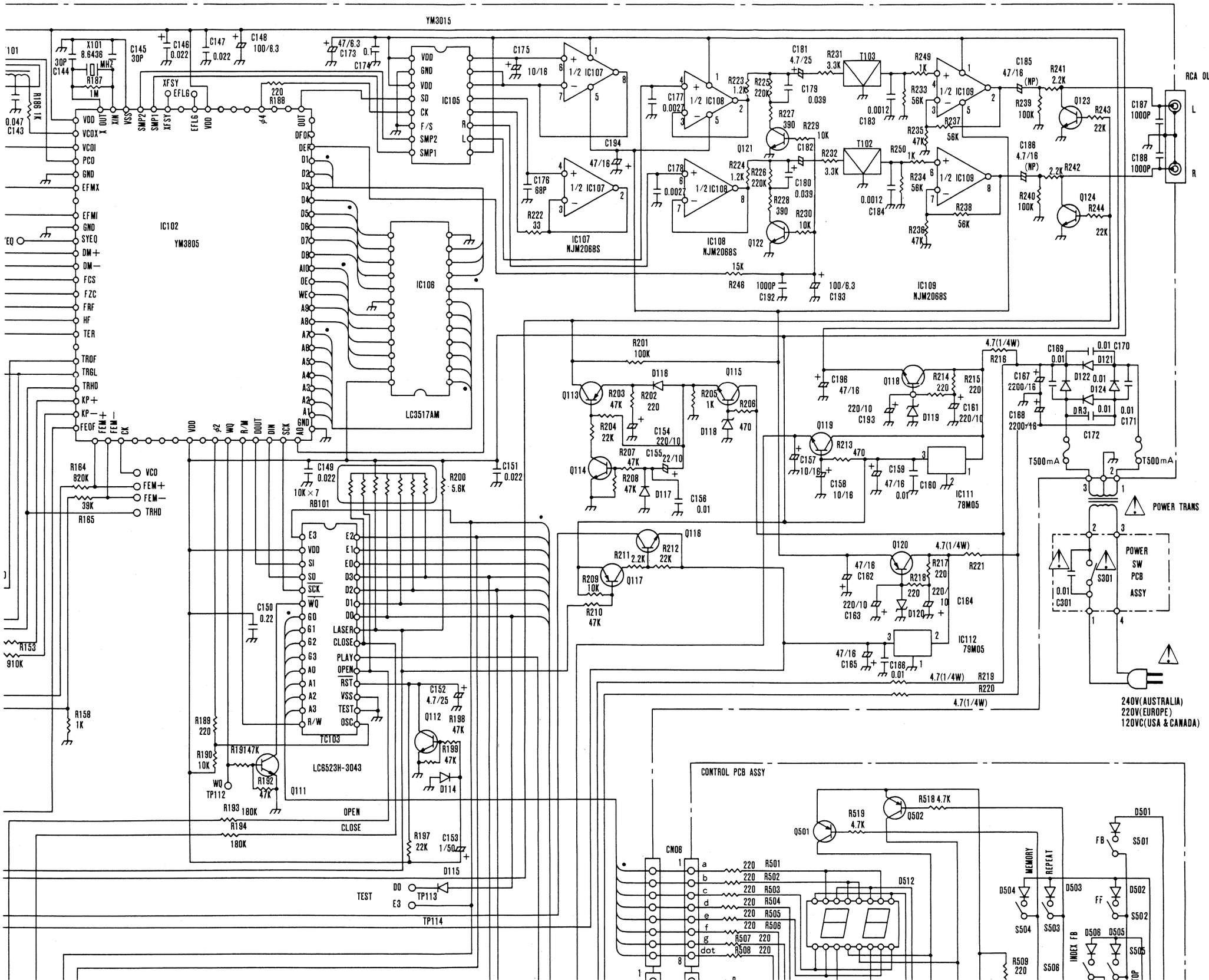
SYMBOL No.	DEVICE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
IC104	NJM2068S	5.0V	2.2V	2.5V	2.5V	-5.0V	2.6V	2.6V	2.4V	-5.0V															
IC105	NJM2068S	6.0V	0V	6.0V	0V	2.3V	0V	1.0V	1.0V	6.0V	3.0V	3.0V	3.0V	3.0V	3.0V	3.0V	3.0V								
IC106	LC3517AM	2.5V	2.5V	2.5V	2.5V	2.5V	2.5V	2.5V	2.5V	2.1V	3.9V	1.6V	0V	3.2V	2.9V	3.6V	3.8V	3.6V	0V	2.5V	2.9V	4.7V	2.5V	2.5V	5.0V
IC107	NJM2068S	6.0V	3.0V	3.0V	3.0V	-6.0V	3.0V	3.0V	3.0V	6.0V															
IC108	NJM2068S	6.0V	3.0V	3.0V	3.0V	-6.0V	3.0V	3.0V	3.0V	6.0V															
IC109	NJM2068S	6.0V	0V	0V	0V	-6.0V	0V	0V	0V	6.0V															
IC110	7256P	0V	0V	0V	0V	-11.9V	0V	0V	0.1V	0.1V	11.3V														
IC111	78M05	11.0V	0V	5.1V																					
IC112	79M05	0V	-11.7V	-5.0V																					

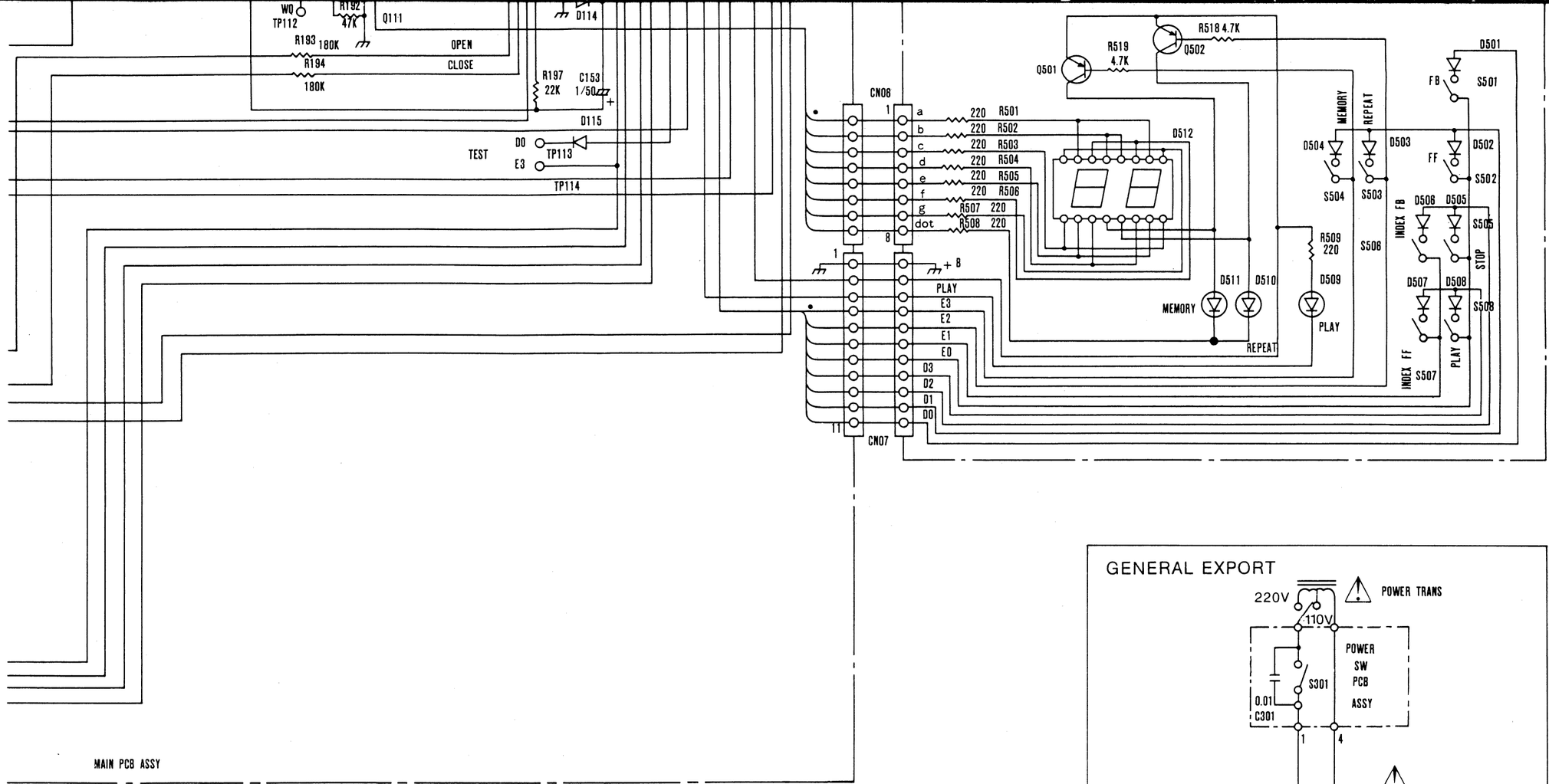
No.	Name	Position
SW101	OPEN/CLOSE Switch	OFF
SW102	PICKUP LIMIT Switch	IN
SW103	LOADING LIMIT Switch	CLOSE
S301	POWER Switch	OFF
S501	FB Switch	OFF
S502	FF Switch	OFF
S503	REPEAT Switch	OFF
S504	MEMORY Switch	OFF
S505	STOP Switch	OFF
S506	INDEX FB Switch	OFF
S507	INDEX FF Switch	OFF
S508	STOP Switch	OFF

PRODUCT S

Each precaution in this manual should be followed during the parts list and the schematic diagram designate comp replacing a component identified with ⚠, use only the re resistance, wattage or voltage that are designated in the p Leakage-current or resistance measurements must b insulated from the supply circuit before returning the prod

SCHEMATIC DIAGRAM (PD-135)





MAIN PCB ASSY

Name	Position
EN/CLOSE Switch	OFF
KUP LIMIT Switch	IN
ADING LIMIT Switch	CLOSE
WER Switch	OFF
Switch	OFF
Switch	OFF
PEAT Switch	OFF
MORY Switch	OFF
OP Switch	OFF
DEX FB Switch	OFF
DEX FF Switch	OFF
OP Switch	OFF

PRODUCT SAFETY NOTICE

n in this manual should be followed during servicing. Components identified with the IEC symbol ⚠ in d the schematic diagram designate components in which safety can be of special significance. When mponent identified with ⚠, use only the replacement parts designated, or parts with the same ratings of age or voltage that are designated in the parts list in this manual.
t or resistance measurements must be made to determine that exposed parts are acceptably he supply circuit before returning the product to the customer.

TRANSISTOR DC VOLTAGES

SYMBOL No.	DEVICE	B	C	E
Q113	2SA608	6.6V	-4.9V	6.6V
Q115	2SC536	7.3V	11.6V	6.6V
Q116	2SD734	-5.0V	-3.2V	-5.0V
Q117	2SA608	4.8V	-5.0V	5.1V
Q118	2SD734	6.6V	11.0V	6.0V
Q119	2SD612	5.0V	10.7V	5.0V
Q120	2SB698	-6.6V	-11.8V	-6.0V

IC PIN NUMBERS DC VOLTAGES

SYMBOL No.	DEVICE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
IC102	YM3805	5.1V	2.3V	2.3V	2.4V	0V	2.5V	2.2V	2.2V	0V	0V	0V	0V	0V	5.0V	0V	4.2V	0V	5.0V	0V	5.0V
		21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
		0V	0V	0V	5.0V	0V	0V	2.2V	1.4V	0.3V	4.9V	0.3V	5.1V	5.0V	1.9V	0V	0V	0V	0V	5.0V	2.5V
		41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
		0V	2.5V	2.5V	2.5V	2.5V	2.5V	2.5V	2.5V	2.5V	2.5V	4.7V	2.9V	2.5V	3.6V	3.8V	3.6V	2.9V	3.2V	1.6V	3.9V
		61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80
		2.1V	2.1V	5.0V	2.6V	0V	0V	2.3V	2.3V	5.0V	5.0V	5.0V	5.0V	3.4V	5.0V	5.0V	1.0V	1.0V	0V	2.3V	2.2V

NOTES:

1. All resistors values are indicated in "ohm" (K=10^3, M=10^6).
2. All capacitors values are indicated in "μF" (P=10^{-12}).
3. All voltages indicated on the schematics are measured under the following conditions.
   a. Use a V.T.V.M.
   b. All voltages ±10 % with respect to chassis ground.
   c. No signals at input terminals.
   d. AC input at 240 volts 50 Hz
4. This is a basic schematic diagram.

TEAC CORPORATION reserves the right to make any changes or modifications without notice for improvements.